

Notice of Allowability

Application No.

09/966,651

Examiner

Edna Wong

Applicant(s)

ZHU ET AL

Art Unit

1753

-- **The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment A dated October 30, 2003.
 2. ☒ The allowed claim(s) is/are 1,5-11,13,15,16,18 and 20.
 3. ☒ The drawings filed on 28 September 2001 are accepted by the Examiner.
 4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: _____.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 - (a) ☐ The translation of the foreign language provisional application has been received.
 6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

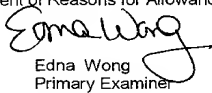
7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No. _____.
 - (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
 - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1 <input type="checkbox"/> Notice of References Cited (PTO-892) | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____ |
| 3 <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No. _____ | 7 <input type="checkbox"/> Examiner's Amendment/Comment |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9 <input type="checkbox"/> Other |


Edna Wong
Primary Examiner
Art Unit: 1753

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Claims **1 and 5-11** are allowable over the prior art of record because the prior art does not teach or suggest a method of forming an electrically conductive structure on a substrate, the method comprising the steps of (a) forming and (b) forming as presently claimed, esp., the combination of (iv) cyclically applying the first current and the second current at a frequency of between about thirty hertz and about one hundred and thirty hertz and (v) wherein the second current density of the second current is between about two times and about four times the first density of the first current.

Claims **13 and 15-16** are allowable over the prior art of record because the prior art does not teach or suggest a method of forming an electrically conductive structure on a substrate, the method comprising the steps of (a) forming, (b) forming and (c) forming as presently claimed, esp., the combination of (iii) applying a second current to the substrate at a reverse bias and a second density for a second duration, where the second duration corresponds to a replenishment time of the plating solution in the etched feature, wherein the second density of the second current is between about two times and about four times the first density of the first current and (v) cyclically applying steps (ii) and (v) at a frequency of between about thirty hertz and about one hundred and thirty hertz.

Claims **18 and 20** are allowable over the prior art of record because the prior art does not teach or suggest a method of forming an electrically conductive structure on a

substrate, the method comprising the steps of (a) forming and (b) forming as presently claimed, esp., the combination of (iv) applying a second current to the substrate at a reverse bias and a second density for a second duration, wherein the second density of the second current is between about two times and about four times the first density of the first current and (v) cyclically applying the first current and the second current at a frequency of between about thirty hertz and about one hundred and thirty hertz.

The prior art does not contain any language that teaches or suggests the above.

Woo et al. do not teach cyclically applying the first current and the second current at a frequency of between about thirty hertz and about one hundred and thirty hertz.

Taylor et al. do not teach applying a second current to the substrate at a reverse bias and a second density for a second duration, wherein the second density of the second current is between about two times and about four times the first density of the first current.

Dubin et al. do not teach cyclically applying the first current and the second current at a frequency of between about thirty hertz and about one hundred and thirty hertz.

Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on

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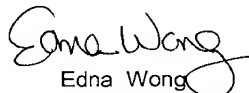
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Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.


Edna Wong
Primary Examiner
Art Unit 1753

EW
November 24, 2003